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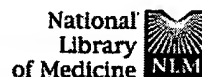
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N,N'-diacetylchitobiase of *Vibrio harveyi*. Primary structure, processing, and evolutionary relationships.

Soto-Gil RW, Zyskind JW.

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The nucleotide sequence of the gene, *chb*, encoding the outer membrane protein, N,N'-diacetylchitobiase (chitobiase), of the marine bacterium, *Vibrio harveyi*, has been determined. The amino acid sequence of prechitobiase was derived from the nucleotide sequence. Prechitobiase has a molecular mass of 97,771 Da and consists of 883 amino acid residues. A characteristic signal peptide is present at the amino terminus whose removal is inhibited by the antibiotic, globomycin, suggesting that mature chitobiase is a lipoprotein with a maturation pathway similar to that of the *Escherichia coli* major outer membrane lipoprotein. A perfect homology to six amino acids at the processing and modification region of the outer membrane lipoprotein of *E. coli* was found with amino acids 15-19 of the deduced prechitobiase protein sequence. Chitobiase shares similarities and possibly common ancestry with the alpha-chain of the human beta-hexosaminidase. A comparison of the amino acid sequences of chitobiase and the alpha-chain of beta-hexosaminidase gave a highly significant alignment score of 19.1 standard deviation units above a mean randomized alignment score. Primer extension analysis of the promoter region revealed three transcription initiation sites used by *E. coli* cells harboring the *chb* gene, two of which were also evident in *V. harveyi* cells.

PMID: 2670926 [PubMed - indexed for MEDLINE]

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